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Frame Creation and Design in the Expanded Field

Abstract Design-trained people have access to a very broad range of professions. Yet there is something paradoxical about this development: ostensibly, many of these highly successful people have moved out of the field of "design." This phenomenon deserves deeper consideration: how do design practices spread across society? What key design practices are particularly relevant to the problems of today's society? Should what these people do still be considered design? To answer these questions, first we need to understand various ways that practices can be adopted and adapted from one discipline to the other. Problem framing emerges as a key design practice that can be adopted and adapted to other fields, and one which provides a valuable alternative to conventional types of problem solving. An example will illustrate how this frame creation allows practitioners to approach today's open, complex, dynamic, networked problems in new and fruitful ways. The paper goes on to argue that the practice of frame creation is still part and parcel of the domain of design, and explores how design can develop into an expanded field of practice.

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Introduction

Design is becoming a real force in the world. Nowadays, design-trained people have gained access to a very broad range of professions, and together they wield enormous influence from positions in senior management, government, and academia (e.g., two Asian cities with populations in the millions have mayors with a background in design). This is clearly a great success, not only for the individuals concerned, but also as a testament to the quality of design practices and the relevance of design education in contemporary society. But there is something paradoxical about this development, too: highly successful people have moved out of the domain of "design" proper (to become "mayor," etc.), ostensibly indicating that the growing influence of design seems to be traveling beyond the confines of traditional (parent) design disciplines. Similarly, a growing number of non-designers are successfully picking up and using design practices to solve problems right across society.[1]

This phenomenon is worth deeper consideration. Which design practices are so relevant to the problems of today's society? How do these design practices spread across society? Should what design-trained people do outside the domain still be considered design – even if their jobs do not have "design" in the title? Which design practices can be picked up and applied by non-designers? What do these developments mean for the future of design practice, the design professions and design education, when the "design" field of operation is so radically expanding?

To answer these questions, first we will need to understand different ways in which design practices can spread from one discipline to the other, and how such practices come to be adopted and adapted in the context of other professional arenas. Then we will take a step back, and ponder the nature of design thinking. This will help us understand the value of design practices, and see why design approaches and practices are now being picked up so avidly as an alternative to conventional types of problem solving. In doing this, we will have to look beyond the skills and abilities used in conventional design practice, and beyond what designers have in common (as this could land us with the lowest common denominator). Thus, in this paper, I have chosen to take the core reasoning process that underlies design (abduction) as a starting point that leads us to concentrate on the corresponding design practice of problem framing. I will then model the practice of frame creation in detail, and through an example, will show how this practice allows non-design practitioners to approach today's open, complex, dynamic, networked problems in new and fruitful ways. I will then go on to argue that the practice of frame creation is still part and parcel of design, and explore how we can develop design into an expanded field of practice.

The Spreading of Design Practices: Adopting and Adapting

How does a profession spread, how do its practices jump to other disciplines and parts of society? Basically, we can distinguish two processes: (1) When practices, techniques and methods are picked up and applied without substantial change (or much thought), we can talk about them being *adopted* by a practitioner in another field. Their adoption typically does not raise any new discussion or instigate development in the 'parent' field. (2) When core principles are transposed to other fields by practitioners abstracting from everyday design practices and connecting these fundamentals to the corresponding needs in the target field, the actor must delve much more deeply into the practices, and *adapt* this understanding to the new use context.[2]

A good example of both these processes can be found in the context of the transdisciplinary curriculum for the UTS Bachelor of Creative Intelligence and

1 Adam Thorpe and Lorraine Gamman, "Design with Society: Why Socially Responsive Design Is Good Enough," *CoDesign* 7, no. 3–4 (September 1, 2011): 217; Kees Dorst, *Frame Innovation—Create New Thinking by Design* (Boston: MIT Press, 2015).

2 See the definition of practices in Manfred A. Max-Neef, "Foundations of Transdisciplinarity," *Ecological Economics* 53, no. 1 (April 1, 2005): 5. For an application in the context of Human Centered Design, see Brouwer Van der Bijl et al., "How Deep Is Deep," in *Proceedings of the Colors of Care*, eds. Juan Salamanca, Pieter Desmet, Andrès Eduardo Burbano Valdès, and Geke Ludden (Bogotà: Ediciones Uniandes, 2014), 280.

3 "Creative Intelligence and Innovation at University of Technology Sydney," last modified July 24, 2015, http://www.uts.edu.au/future-students/creative-intelligence-and-innovation.

4 See Adriaan de Groot, *Thought and Choice in Chess* (Amsterdam: Amsterdam University Press, 2008); Allen Newell and Herbert Alexander Simon, *Human Problem Solving*, vol. 104, no. 9 (Englewood Cliffs, NJ: Prentice-Hall, 1972).

5 Chris Argyris, *Flawed Advice and the Management Trap* (Oxford: Oxford University Press, 2000); Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Random House, 2006).

6 Ralph Stacey, Douglas Griffin, and Patricia Shaw, *Complexity and Management: Fad or Radical Challenge to Systems Thinking* (London: Routledge, 2000); Ralph Stacey and Douglas Griffin, eds., *Complexity and the Experience of Managing in Public Sector Organizations* (New York: Routledge, 2005); Hans Boutellier, *The Improvising Society Social Order in a Boundless World* (The Hague: Eleven International Publishing, 2013).

7 Dorst, *Frame Innovation*.

8 Wybo Houkes, Pieter E. Vermaas, Kees Dorst, and Marc J. de Vries, "Design and Use as Plans: An Action-Theoretical Account," *Design Studies* 23, no. 3 (May 2002): 303; N.F.M. Roozenburg and J. Eekels, *Product Design: Fundamentals and Methods* (Chichester, New York: Wiley, 1995).

Innovation double degree program, launched in 2014.[3] At one point during its development, a staff member from the Design School at the University of Technology Sydney wanted to discuss an exchange of practices with the Law Faculty. The Law department representative expressed great interest in certain practices from Design. She framed her question by explaining that currently, Law is almost always behind the times: a new technical development emerges, and the Law profession focuses on related infringements only after they appear in court the first time (with some noted exceptions, e.g., speculative law centers at some universities). Such court cases thus tend to be lengthy and very expensive, are only affordable by big corporations and hold up innovation and progress in society inadvertently. So the Law department was interested in adopting certain techniques that designers use to 'look ahead' (scenario methods, technology roadmaps, forecasting/backcasting, etc.). Conversely, the Design representative sought to learn from the Law field how it deals with precedent – after all, court cases are kept and archived as situated knowledge so that when the need arises, an earlier judgment can be retrieved, and the old context in which it arose can be compared with the current court case. A subtle language has been built up to accompany this interpretation – consequently, case-related discussions often focus on the appropriateness of the precedents used to support an argument, rather than on the details of the case at hand. This is in marked contrast to the field of Design, which seems to have no systematic way of dealing with memory at all: when designing for a current problem a designer might try to use an earlier design instance for inspiration, but there is no system that consistently identifies the most appropriate design precedents, including contextual information needed to understand why each was deemed a success in its time. Thus Design as a field might learn from Law in this instance – but not by simply adopting legal practices; these would have to be radically adapted to fit into a design framework.

When such adaptation of a practice happens at a deeper level, the process could end up influencing both domains: the novel adaptation can exert influence on the 'parent' discipline as well. In the example above, the newly developed design practice used to deal with precedents could give rise to new developments in the way precedents are presented and used within the Law profession.

This type of significant innovation in practices across fields is more likely when the core practices of a discipline are concerned. An important case in point is that of Design Abduction, and the corresponding practices of problem framing in design.

Abduction and Framing in Design

To sketch the context for this development: over the last 50 years, knowledge of the human capacity for problem solving has broadened from a narrow concentration on the individual[4] to the study of collective problem-solving processes in organizations.[5] And in the last 20 years, the rise of the networked society has sparked interest in collective problem solving that takes place outside the confines of a single organization, in networks of stakeholders that can be spread throughout society.[6] The need to address such open, complex, dynamic and networked problems in society has led to a keen interest in how expert designers approach problems.[7] As it happens, expert design practitioners have developed unique practices and strategies to deal with open, complex, dynamic and networked problems, for use originally within the confines of the design disciplines. The reason they have done so lies in the central challenge of design, which is design abduction: how to think from consequences (e.g., a need to be addressed, or a value to be attained) back to causes (the designed objects, systems, services) and working principles (the way things work, as well as the way they need to be used/enacted to achieve functionality).[8]

In design abduction, the starting point is that we *only* know about the nature of the outcome and the desired value we want to achieve. So, the challenge is to figure out "what" to create, while there is no known or chosen "how," that we can trust to lead to the desired outcome. Thus, we have to create or choose both a "what," and a "how" – as these are quite dependent on one another, they should be developed in parallel. This double creative leap requires designers to devise proposals for both the "what" and the "how," and test them in conjunction.[9] An example can help to clarify this: say that the *outcome* we want to achieve can be defined as an energy rush when coming to work in the morning. In design abduction, we only know the goal (quick rush of energy before work) but would not how to achieve it. Hence, if we propose that a cup of coffee (the "how") will fulfill the need, we would still need to create a design for a machine to make the coffee (the "what"), and then judge whether this would do the trick (Is it quick enough? Is it economical? Is it environmentally sustainable?). If none of the coffee machines we can think of will satisfy the criteria, we might need to go back to the drawing board, and start considering other ways of creating the energy rush. The choice to use a chemical stimulus (caffeine) as a way to feel energized is the frame, the initial approach to the problem. But this problem might be reframed by proposing that there are also social ways of being energized (an inspiring conversation); or by delving deeper, and saying that what we are really looking for is not so much the energy rush, but a level of concentration – in which case, meditation would be a way to achieve the clarity of mind that is otherwise achieved by drinking coffee…(and it is much better for you). I call the act of proposing such a hypothetical way of looking at the problem "framing." Framing is the key to design abduction. This is because the most logical way to approach a design problem is to work backward, as it were: starting from the only "known" in the equation, the desired value, and then adopting or developing a frame that is new to the problem situation.[10] Earlier empirical research into design practices has shown that designers indeed spend a lot of time reasoning from desired outcomes via frames to possible design solutions, and go back again to reframing the problem when they suspect that the design solution is inadequate.[11] This reasoning pattern leads to the oft-observed phenomenon of designers 'playing around' with ideas, tossing up possibilities (proposals) for frames, working mechanisms, and solutions in what may look like a childishly playful trial-and-error process. Yet this is serious work: in doing so, design practitioners try out and think through many possibilities, building up intuition about what frames might work in the problematic situation before they pursue one in greater depth.

Accordingly, in expert design practice, the design problem is not fixed before the search begins for a satisfactory solution concept. Expert design is more a matter of developing and refining both the formulation of a problem and ideas for a solution in concert, in a process called "co-evolution."[12] An "idea" occurs when a bridge is built between the problem space and the solution space by the identification of a key concept. Therefore, expert design practices have as much to do with reformulating the problem as with the generation of suitable solutions. The possibility of developing problem situations radically shifts the scope of design practices: even the desired outcome can mutate with the adoption of a new frame, enabling designers much more freedom to step away from the initial paradoxical problem definition.[13] This comes from the realization that a paradox is completely contradictory only in a certain, predefined *context*.

As Caroline Whitbeck has observed, designers can do something different here. In her book *Ethics in Engineering Practice and Research*, Caroline Whitbeck remarks, "The initial assumption (within moral philosophy) that a conflict is

9 Kees Dorst, "The Core of 'Design Thinking' and its Application," *Design Studies* 32, no. 6 (November 2011): 521.

10 Dorst, *Frame Innovation*.

11 Dorst, "Core of 'Design Thinking'," 521; Donald A Schön and Glenn Wiggins, "Kinds of Seeing and Their Functions in Designing," *Design Studies* 13, no. 2 (April 1992): 135.

12 Kees Dorst and Nigel Cross, "Creativity in the Design Process: Co-Evolution of Problem–Solution," *Design Studies* 22, no. 5 (September 2001): 425.

13 Bec Paton and Kees Dorst, "Briefing and Reframing: A Situated Practice," *Design Studies* 32, no. 6 (November 2011): 573.

14 Caroline Whitbeck, *Ethics in Engineering Practice and Research* (Cambridge: Cambridge University Press, 2011), 56.
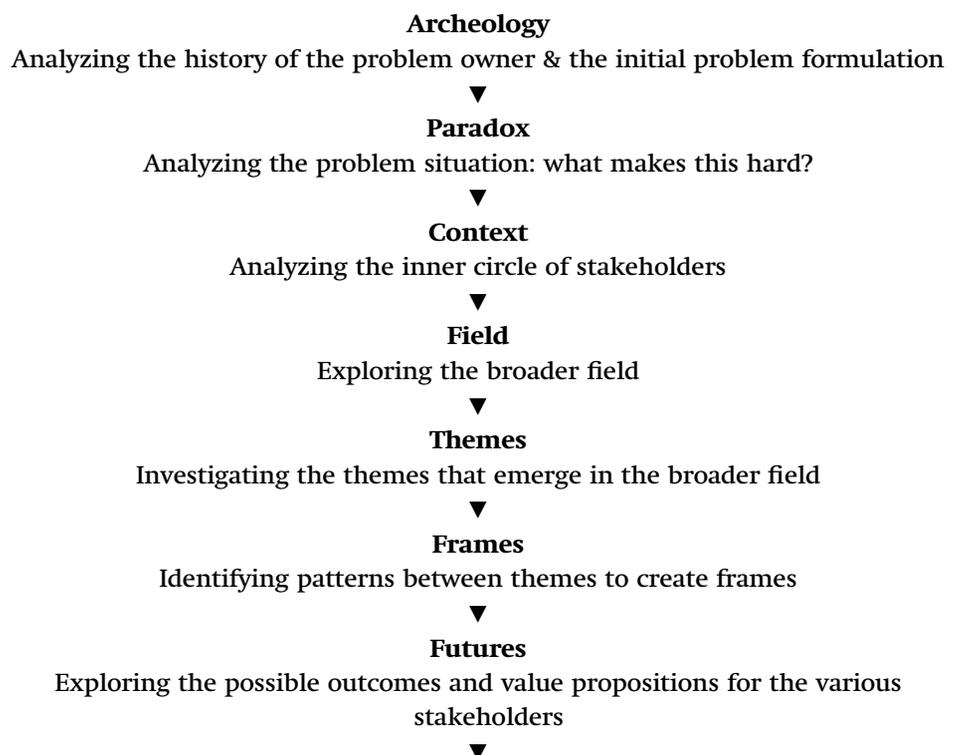
15 Dorst, *Frame Innovation.*

irresolvable is misguided, because it defeats any attempt to do what design engineers often do so well, namely, to satisfy potentially conflicting considerations simultaneously."[14]

Frame Creation

Thus, design contains a process of thinking around the paradox rather than confronting it head-on. The solution is not within the core paradox itself (which is stuck in closed definitions), but in the broad area of contextual values and themes surrounding the paradox. The richer and more complex the context, the more chance that fruitful avenues to move forward can be found. So when creating a frame, that is, a novel standpoint from which a problem can be solved, design practitioners broaden the "system border" and then concentrate on understanding what is at play in this broader problem arena. They use the richness of the artificially broadened context to understand the deeper issues and needs that are at play in the problem situation. As we will see in the example below, it is this subtle understanding of the underlying dynamics of a problem situation that enables them to create new approaches to the original problem.

Organizations from the public and private sector alike are realizing that the open, complex, dynamic, and networked problem situations that characterize our modern world require framing to make them amenable to solution. This explains their acute interest in the very sophisticated framing practices of expert designers. These practices can play an invaluable, even crucial role in organizational problem solving.

A new approach to a problem is thus called a "frame," and the key design practice I focus on in this paper is called "Frame Creation."[15] The core frame creation model centers upon a 9-step process that addresses open, complex, dynamic and networked problems by creating a new, broader context for the problem, and then concentrating on the emergence of underlying "Themes" that lead to the creation of "Frames" for action.

Archeology
Analyzing the history of the problem owner & the initial problem formulation
▼
Paradox
Analyzing the problem situation: what makes this hard?
▼
Context
Analyzing the inner circle of stakeholders
▼
Field
Exploring the broader field
▼
Themes
Investigating the themes that emerge in the broader field
▼
Frames
Identifying patterns between themes to create frames
▼
Futures
Exploring the possible outcomes and value propositions for the various stakeholders
▼

Transformation

Investigating changes in stakeholders' strategies and practices required for implementation

▼

Integration

Drawing lessons from the new approach & identify new opportunities within the network

The key principle of frame creation lies in its approach to a problem situation. The problem and its formulation have their roots in a specific context that needs to be critically appraised and altered before the problem itself can be attacked, so that we can move beyond the simplifications and frames that underlie conventional problem solving. Within frame creation, such assumptions are questioned, and the problem solver is invited to embrace the complexity of the situation by expanding the problem-solving arena to understand the needs and values located in the broader field. This then allows him/her to ponder the possibilities for action that have been sparked by the emergence of common themes. Central to the Frame Creation model is the fifth step, where a phenomenological analysis of the values held by stakeholders in the broader societal field leads to the identification of common themes that underlie the problem situation.[16] New approaches to the problem situation can then be created through a subtle process of inference: once commonalities in themes have been identified, comparisons can be drawn, often through metaphor, to situations outside of the problem domain in which these themes are realized. These situations then provide new points of reference ("frames") to solving the problem at hand. The first four steps lay the groundwork; the last steps explore the implications of the potential frames and proposed solution directions for the stakeholders.

A brief example should help to explain the workings of this frame creation process:[17]

> "*The A9 highway around Amsterdam is one of the busiest roads in the Netherlands. Commuters use it daily, to travel to and from the satellite cities. To improve accessibility and air quality, and reduce sound levels around one of the bottlenecks of the road, a new tunnel will be built that can take up to 130,000 cars per day. A new park will be made on the roof of the tunnel. The construction work is expected to take about 5 years, and these works will heavily impact the environment: not only the adjoining residential neighborhoods, the Bijlmer (a multicultural district of 80,000 people from 186 nationalities) and Gaasperdam, but also the large concentration of office buildings (multinational headquarters), the VU University Medical Centre and the Ajax Amsterdam Arena further along the ring road.*
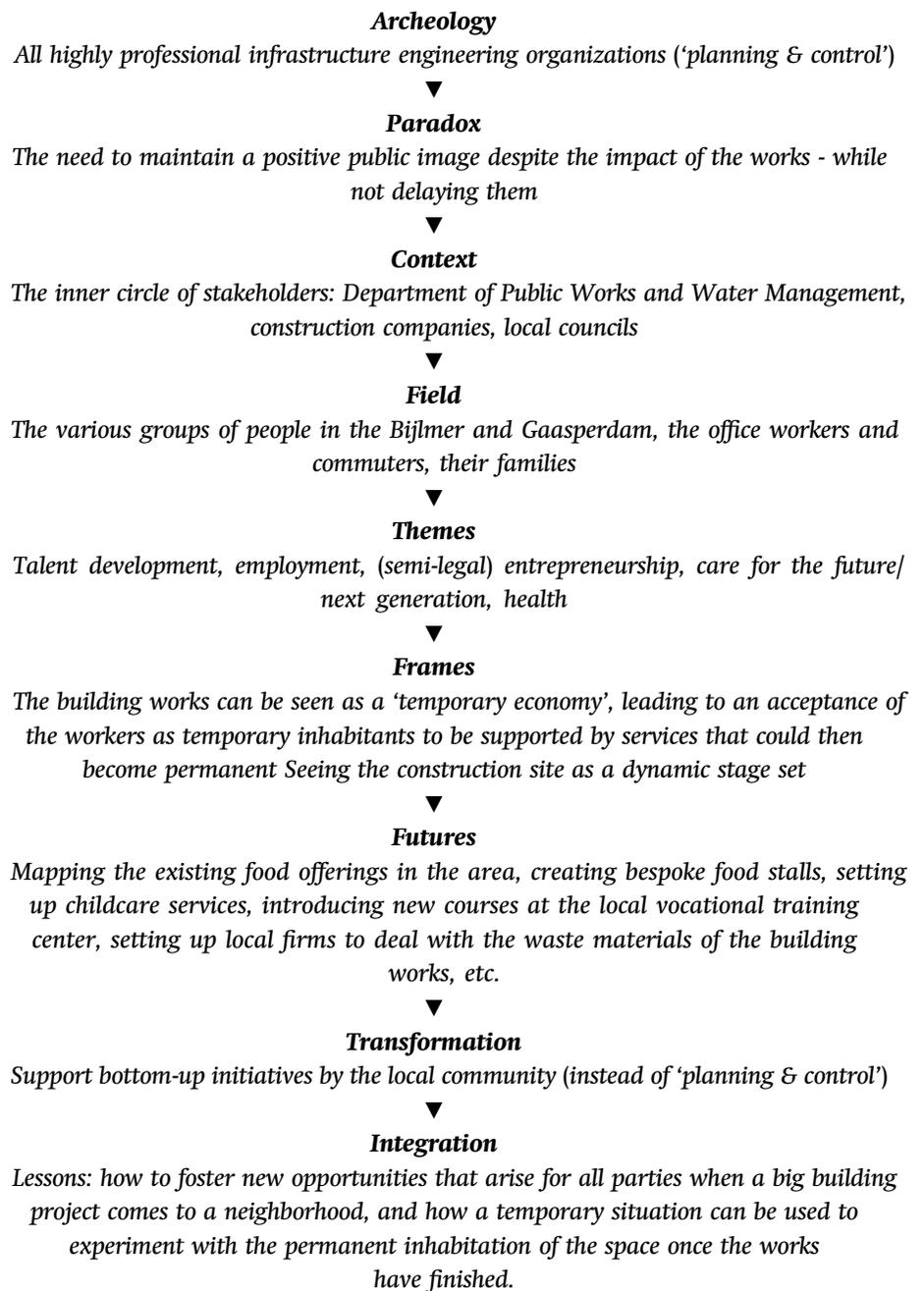>
> *This is a tightrope-job for the 'Stakeholder-manager', whose task it is to communicate the program to those impacted and to handle complaints. The context in which they have to operate is one of hard facts and figures: building a new road takes place in a world of strict planning and tight control, complex process diagrams and tough budgets. Communication with external stakeholders is professionally handled through extensive consultation processes in order to prevent costly delays. Any delay translates in higher costs, and the simmering public perception of these projects is that they cost too much money.*
>
> *André Schaminée (consultant at Twynstra Gudde, and a person with a deep knowledge of infrastructural projects who is also familiar with design) suggested investigating the relationship between the construction works and the surroundings in a designerly way, through frame creation. He teamed up with Vera Winthagen (Van Berlo design/ TU Eindhoven) and Tabo Goudswaard (social designer). Together they facilitated a process in which the Department of Public Works and Water Management (Rijkswaterstaat), the municipality of*

Amsterdam and the construction company each contributed. The process unfolded as follows:

Archeology
All highly professional infrastructure engineering organizations ('planning & control')

▼

Paradox
The need to maintain a positive public image despite the impact of the works - while not delaying them

▼

Context
The inner circle of stakeholders: Department of Public Works and Water Management, construction companies, local councils

▼

Field
The various groups of people in the Bijlmer and Gaasperdam, the office workers and commuters, their families

▼

Themes
Talent development, employment, (semi-legal) entrepreneurship, care for the future/ next generation, health

▼

Frames
The building works can be seen as a 'temporary economy', leading to an acceptance of the workers as temporary inhabitants to be supported by services that could then become permanent Seeing the construction site as a dynamic stage set

▼

Futures
Mapping the existing food offerings in the area, creating bespoke food stalls, setting up childcare services, introducing new courses at the local vocational training center, setting up local firms to deal with the waste materials of the building works, etc.

▼

Transformation
Support bottom-up initiatives by the local community (instead of 'planning & control')

▼

Integration
Lessons: how to foster new opportunities that arise for all parties when a big building project comes to a neighborhood, and how a temporary situation can be used to experiment with the permanent inhabitation of the space once the works have finished.

Some highlights that most clearly demonstrate the nature of the Frame Creation approach: after going through the first four steps of the process by mapping the problem, its existing context, and the broader field, the researchers spent time in the multicultural Bijlmer and Gaasperdam areas, to glean which underlying Themes were important in the lives and minds of the people, municipality, and companies there. This was a very rich process, and many fruitful Themes were identified, leading to frames and solution directions. Just to take one as an example: the researchers discovered that there were many exceptional small entrepreneurs in the area, but that a good many of them were semi-legal, and one had to be part of the community to find them. Many conversations in the Bijlmer revolved around jobs, how hard it was to hire real talent, what successful entrepreneurship

18 See Robert Lulham et al., "Designing a Counter-Terrorism Trash Bin," in *Design Against Crime: Crime Proofing Everyday Products*, ed. Paul Ekblom, *Crime Prevention Studies* 27 (Boulder: Lynne Rienner Publishers, 2012), 131.

19 Thorpe and Gamman, "Design with Society," 217.

20 Peik Suyling, Diana Krabbendam, and Kees Dorst, eds., *More than 8 Design Ideas for the Integrated Living of Mentally Handicapped People in Society* (The Hague: Ministry of Health, Wellbeing and Sports, 2005).

21 See Dorst, *Frame Innovation*; and Dorst, Watson, and Kaldor, *Design Innovation*, for roughly 40 case studies.

entails and what conditions one needs to develop a business freely. This theme led to the development of a new frame that captured the needs of both the people and organizations in the area: what if you could see the building of the tunnel as a new 'temporary economy'? What new connections could we make then? Both the municipality and the Department reacted enthusiastically. The project has been successful in influencing 'stakeholder-managers' to look at the area with an open mind, and see many new possibilities; the municipality and Department now have a better relationship, the construction company is on board, and together they are developing a common language for the project.

The framing of five years' construction work as a time for experimentation and renewal really strikes a chord with the local community. Welcoming the workers as temporary inhabitants of the area and supporting them with small-scale entrepreneurial activity that springs up around the works (food stalls, childcare, repair services, etc.) will be a great way to prototype the facilities that might eventually populate the park that is to cover the tunnel. The big shift for the Department of Public Works and Water Management, the municipality and the construction company will be to relax some of their 'planning and control' paradigm, and discover the local community as a source of innovation."

Please note that while this is an example of strategic thinking, it is not the traditional strategy-formulation process that a business school would teach: the frame creation approach, as all of design, remains firmly grounded on content, and is always situated. The properties and requirements of the content in the problem situation shape the activities, not the other way around.

This example is just one of over 140 experimental Frame Creation projects executed within the Design Innovation research center and Designing Out Crime research centers at UTS[18] and TU Eindhoven, in close collaboration with public- and private-sector organizations and international academic partners (The Hague University, Hong Kong Polytechnic, University of the Arts London).[19] Project issues ranged from planning problems related to a new light rail link, to violence in entertainment districts, the integration of mentally handicapped people in society,[20] a new value proposition for clothing retail, counter-terrorism measures, the growing issues of loneliness in our societies, and the deep and complex problems of social housing.[21] Through these experiments, my colleagues and I have established the kinds of problems to which frame creation, as a design-based approach to problem solving, can be fruitfully applied, what the parameters are for its successful application, and how partner organizations can be helped to successfully adopt Frame Creation as part of their problem-solving repertoire (and in the example above: how the "stakeholder-managers" might effectively become designers). The success of these projects and programs demonstrates how a core design practice can be transplanted and adopted far beyond the remit of the design disciplines.

Still Design?

This is an exciting development, as it helps designers extend their scope, and move beyond the confines of their parent design disciplines. Yet experience has shown that often design practitioners seem to cling to aspects of the design professions that paradoxically limit their contribution to frame creation-type processes. For example, designers can display an over-eagerness to define the nature of the solution early on in the process, thereby limiting the frames considered. Frame Creation is purely problem-focused, which means that at the beginning of the process, the nature of the outcome is unknown (it could be an organization, a process, a series of workshops). This is clearly a problem for people trained in

22 Joyce Yee, Emma Jefferies, and Lauren Tan, *Design Transitions: Inspiring Stories. Global Viewpoints. How Design Is Changing* (Amsterdam: BIS Publishers, 2013); Van Dijk and Raijmakers, "New Product-Service Concept," 480; DesignX Collaborative, "DesignX Statement," *Academia.edu*, last modified December 3, 2014, https://www.academia.edu/9605908/DesignX_Collaborative._2014._DesignX.

23 Nigel Cross, "The Nature and Nurture of Design Ability," *Design Studies* 11, no. 3 (July 1, 1990): 127.

24 Rosalind Krauss, "Sculpture in the Expanded Field," *October* 8 (April 1, 1979): 31.

25 Mark Titmarsh, "Shapes of Inhabitation: Painting in the Expanded Field." *Art Monthly Australia* 189 (2006): 27; Mark Titmarsh, "Contemporary Hybrid Painting: The Poetics of a Post-Medium Condition," in *New Imaging: Transdisciplinary Strategies for Art beyond the New Media*, ed. Su Baker and Paul Thomas (Sydney: Transdisciplinary Imaging Conference 2010), 132.

design disciplines that are defined and named by the nature of their outcomes ("products," "graphic design," "fashion"). Also, the normal orientation of design as a service to industry is under threat, as within frame creation there often is more than one client — actually a network of interested parties that has come together around a problem. This makes it very difficult to define "the client" and "the project" early on in these processes. And frame creation requires a deep, personal interaction with the problem field: the propensity in conventional modernist design to work based on assumptions about the outside world (by remaining in the white space of the studio or relying on research sources) severely hampers access to depth in the understanding of the core Themes underlying a problem. And then there is a certain designer's arrogance where it comes to wanting to dominate the creative dimension of the project, which often does not help when the challenge in frame creation lies in listening to each stakeholder and patiently, painstakingly building up support for the new approach and solution directions in the network.

The bleakest scenario would be that while design is moving into the wide world, designers are left behind. Luckily this is not completely true: there is a new generation of designers that are breaking the mold, for instance social designers are leaving the safety of the studio and the classic modernist role and embedding themselves in companies and neighborhoods. Design is beginning to develop in exciting new ways that look vastly different.[22] As always, new development is accompanied by a countermovement of practitioners that do hold on to the design professions as we once knew them. Many design schools find themselves at a crossroads — while they still focus on nurturing Cross' basic "design abilities" in the undergrad curriculum,[23] they are struggling to build up postgraduate offerings that break away from some of the limiting assumptions that have crept into the design professions.

The Expanded Field

How can we productively think about these developments, make sense of them, and shape them? This is more or less the same question that Rosalind Krauss tried to answer in her seminal paper on the revolutionary developments in sculpture, "Sculpture in the expanded field."[24] At that time, modern sculptures had left behind their monumental value — left the pedestal — and moved far beyond the usual materials (from bronze and stone to butter), shapes (from the human figure to radical abstraction), even giving up on their sense of permanency (throw-away materials, performances) and object orientation (land art). In short, sculpture had become a conceptual field, and this sparked an acute sense of crisis among artists and art schools. Threatened professionals were even falling back to the lame position that one can only be called a "sculptor" if one had been trained as such in an established art school (alas — we now sometimes hear the same in design).

In her essay, Krauss attempted to describe these radical steps away from traditional sculpture as part of a logical development, as a dialectic of sculpture against its defining characteristics. She successfully showed that at its core, modern sculpture was still dealing with the deeper issues of sculpture (place, materiality, relating three-dimensionally). The fact that these new objects and experiences were part of that discussion qualified them as "sculpture" in an expanded meaning of that term.[25]

Contemporary developments in design can be described and understood in much the same way. Like sculpture, the professional field that we so easily label "design" is full of fundamental contradictions and deep inner tensions that continuously feed discussion in the field. To name a few: (1) design objectives and

designers' motivations can range from the financial to the social (commercial success versus common good); (2) The role and position of the designer can be as autonomous creator, or in service to the client (creation versus problem solving); (3) The drive of the designer can be idealistic, or it can be more down to earth (utopism versus pragmatics); (4) The resulting design can be a "thing," but also an experience, a service, or a piece of learning (materiality versus immateriality of outcome); (5) The basis for the process of designing can be intuitive, or based on knowledge and research (art school versus academic design). These are just some examples of the inner tensions in design; there are many more. The historic development of the design disciplines can be traced along these lines of tension — with designers in different environments and at various times changing position relative to these paradoxes, but never resolving them. These paradoxes are an inherent and inescapable part of the professional landscape designers are living in. The personal choices that designers make about where they place themselves on these sliding scales are part of the continuous discussion in the field. Ultimately, the real strength and coherence of design as a field of professions comes from recognizing these contradictions. More than a common set of skills,[26] it is these inner contradictions in design that define its culture, its mentality — dealing with these incongruities is what binds designers most.

An example of design that deals with these paradoxes may clarify the point. The Bauhaus can be seen as a place where some of these contradictions were almost temporarily resolved. At that rare moment in time, developments in Art & Industry seemed to align, converging around the creation of more abstract forms and a rejection of ornamentation in favor of more geometric shapes that were — quite conveniently for industry — also simpler and cheaper to produce. This wonderful alignment served to elevate the designer as a professional, by closely associating the field with the ability to serve both of these masters. It all came together, at least in retrospect we can say it did; although the diversity in the output of Bauhaus projects really denies that, and we know that at the time, the school was riddled with conflicts.[27] The beauty of this integration is alluring, and in our design schools, we are still copying part of Itten's Vorkurs and other teachings[28] to get closer to the glow of this Golden Age. But this is an exercise in futility: both Art and Industry have moved on, and it is hard to see how such alignment could be re-created in our modern world. It is impossible to translate the Bauhaus to this age, although the question "what would the Bauhaus look like now?" is of course very relevant.

The question of what is best practice for a design school has been unanswerable for at least twenty years — not because of weakness or a loss of coherence in design, but because design itself has become an expanded field. The key point here is protecting the rigor and coherence of the discussion within this expanded field: if one chooses to dispel a new development or adaptation of design from the discussion, that creates an offshoot (rather than expanding the field). Diversification without discussion is just scattering.

Concluding Remarks: Designers in the Expanded Field

A beautiful contemporary example of a designer rattling the cage of her design profession from within is the renowned textile designer Cecilia Heffer. She carefully explores the boundaries of her chosen medium (Lace) in a designerly way, by using elements of its definition as variables to create contemporary varieties — always radically changing some variables, but never too many.[29] Thus, she is not just borrowing particular qualities of lace for use in another context (e.g., making a graphic pattern into a print) but exploring how the concept of Lace itself can be

26 Cross, "Nature and Nurture," 127.

27 Philipp Oswalt, ed., *Bauhaus Conflicts, 1919–2009: Controversies and Counterparts* (Ostfildern: Hatje Cantz, 2009).

28 Clark V. Poling, *Kandinsky's Teaching at the Bauhaus: Color Theory and Analytical Drawing* (New York: Rizzoli, 1987).

29 Lindie Ward, "Openwork Patterns," *Artlink* 32, no. 1 (March 2012): 36; Amanda Briggs-Goode and Deborah Dean, *Lace: Here: Now* (London: Black Dog Publishing, 2014).

30 Kees Dorst, "Lace Speaks to Us Again," in *Lace: Contemporary Textiles: Exhibition + New Works: Ceceila Heffer 2006–2007*, ed. Celia Heffer (Ultimo, NSW: DAB DOCS, 2007), 7.

expanded.[30] Through these explorations, she has discovered new connections to other fields within and beyond the designing disciplines.

In the same vein, Frame Creation can be seen as an expansion of the design field. After all, it is squarely based upon design practices, and its model is more a new coherence between well-known elements in design than an invention whose practice moves away from design. As a body of work, Frame Creation is based on design practices, but has moved these into a different context, creating value in arenas where design has hitherto enjoyed little currency. It has shown the remarkable strength of these design practices, and now that it has proven itself as a new model for problem solving, it serves as a conduit for connecting to other fields like philosophy (phenomenology), psychology, cultural studies, business (Innovation management, organizational studies) that can then start to influence the discussions around design. It has already led to new insights into the qualities of design practices, and the relationships between them. Yet Frame Creation is still part and parcel of the design field, as it is anchored in the same paradoxes and inner contradictions that were described above as the core of the design discussion.

The impact of design in the expanded sense of the word can be measured by the impact of design-trained people, and the people that are touched and influenced by them. They are contributing to the innovative edge of many organizations and professions. Some may just be using small parts of their design upbringing in their careers; others take whole swathes of design skills, knowledge and practices and reconfigure them to suit their challenges. In the highway-planning example, we saw how a complex set of design practices around frame creation is adapted to a new domain, and then implemented by the organizations involved. This is done in a way that cannot be put down to just the opportunistic application of some design techniques: high-level practices, skills and the very mentality of design have been transposed into this new context. These new developments open up the design discussion, and challenge us to think about which practices might inform the creation of design-type management, or design-type social work; or consider what would be the designerly way to carry out policy development — which brings up the question: what IS the design approach to being the mayor of a very big city, exactly?

An extreme example is the aforementioned Bachelor of Creative Intelligence and Innovation. This degree program is built on the systematic swap of deeper practices between disciplines from 24 degrees right across the university. As often when deeper practices are involved, the influence works both ways; the double degree significantly influences and enriches the teaching of practices of the core degrees, and it adapts the profile of the students to mirror the multidisciplinary and complex nature of the problems they are going to face upon graduation. At the basis of this degree lie design practices — where design is adopted and adapted as a basis for networked problem solving and complex transdisciplinary collaboration. While one can dismiss this as development so far afield from conventional design practice as to be insignificant, I would argue that it is possibly close to future design practices and a whole new role for design.

But as previously noted, multifaceted professional fields like design are held together by a common discussion, and the challenge for design is to keep redefining and broadening the discussion to include these new developments. Otherwise it loses out, by misunderstanding or ignoring its own offspring. Design schools should take pains to include the in-depth practices of "ex-designers," showing the roles these people play within and outside of design. If the schools do not show how design is expanding, they are doing a real disservice to their students…to be blunt: they would be ignoring the developing careers of their graduates.

Eventually, we will have to move to a new, dynamic definition of design as an expanded field.

Epilogue: There is a Baby in the Bathwater

One small remark needs to be added: the "design thinking" movement that has taken the business schools by storm in the last 10 years can easily be dismissed as superficial and opportunistic. And sure, a lot of the design thinking courses out there do not go further than the promotion of some shallow design skills and creativity techniques – great feel-good factor, but very little substance. That part of "design thinking" will indeed be a passing fad. But what this obscures is the real, in-depth processes that this paper has tried to sketch: design holds incredibly valuable sets of practices that are more relevant than ever. Rather than saying that "*design thinking is dead*" and throwing it out,[31] we need to engage with these developments, go back to first principles, and create coherent practices that do make sense outside of the confines of the traditional design disciplines. Our limits in this are determined by our ability to expand the discussion, question established ways of working, and create new coherent sets of practices from the rich repertoire that the design disciplines have given us. Frame creation is just one example of how design can expand and flourish.

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